

**Before the
Federal Communications Commission
Washington, D.C. 20554**

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| In the Matter of |) | |
| |) | |
| |) | |
| Amendment of Part 101 of the Commission's |) | WT Docket No. 07-54 |
| Rules to Modify Antenna Requirements for the |) | RM-11043 |
| 10.7 – 11.7 GHz Band |) | |
| |) | |

NOTICE OF PROPOSED RULEMAKING

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By the Commission: Commissioners Adelstein and McDowell issuing separate statements.

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I. INTRODUCTION

1. In this *Notice of Proposed Rule Making (NPRM)*, we seek comment on modifying the Commission’s Part 101 Rules to permit the installation of smaller antennas by Fixed Service (FS) operators in the 10.7 – 11.7 GHz (11 GHz) band,¹ in response to a petition for rulemaking filed by FiberTower, Inc. (FiberTower), a wireless backhaul provider.² In particular, we seek comment on whether these modifications would serve the public interest by facilitating the efficient use of the 11 GHz band while protecting other users in the band from interference due to the use of smaller antennas.

II. BACKGROUND

A. The 11 GHz Band and Related Part 101 Rules

2. The 11 GHz band is allocated within the United States on a co-primary basis to the Fixed Services (FS), licensed under Part 101 of the Commission’s Rules,³ and to the Fixed Satellite Service (FSS), licensed under Part 25 of the Commission’s Rules.⁴ Specifically, in the United States, the 11 GHz band is used by the FS for Local Television Transmission Service (LTTS), Private Operational Fixed Point to Point Microwave, and Common Carrier Fixed Point-to-Point Microwave operations. Although the 11 GHz band is allocated internationally for FSS on a primary basis, the use of the FSS downlink band at 11 GHz is limited, within the United States, to international systems, *i.e.*, other than domestic systems.⁵

¹ See 47 C.F.R. §§ 101.103, 101.115(b). The Commission’s Rules, on their face, do not mandate a specific antenna size. Rather, they establish technical parameters that, given the current state of technology, translate to a certain size antenna.

² FiberTower, Inc., Petition for Rulemaking (filed July 14, 2004) (FiberTower Petition or Petition for Rulemaking). FiberTower markets backhaul services primarily to mobile wireless carriers seeking a competitive alternative to traditional transport facilities, such as copper T-1s, for carrying traffic from cell sites to mobile switching centers. FiberTower states that its backhaul service could be used for new modes of residential and mobile broadband delivery – Broadband over Power Lines (BPL), fiber-to-the-curb (FTTC), and Advanced Wireless Services (AWS) – together with broadband Internet access for schools, businesses, and apartment buildings, and interconnection of industrial campuses.

³ 47 C.F.R. Part 101.

⁴ 47 C.F.R. Part 25. The 11 GHz band is used for geostationary satellite (GSO) operations, and the 10.7 – 10.95 GHz and 11.2 – 11.45 GHz portion of the spectrum is designated as a “planned band” under Appendix 30B of the International Telecommunications Union (ITU) rules. This means that, for this segment of the band, each country is assigned frequencies at certain orbital locations in the geostationary orbital arc.

⁵ See 47 C.F.R. § 2.106 NG104 (stating that “[t]he use of the bands 10.7-11.7 GHz (space to Earth)...by the fixed satellite service in the geostationary-satellite orbit shall be limited to international systems, *i.e.*, other than domestic systems”).

The Commission explained that the “domestic allocation was less than the international allocation . . . because we are constrained by the need to protect substantial incumbent operations and licensees . . .”⁶ To date, the domestic use of the 11 GHz band by the FSS has therefore been limited.⁷

3. Section 101.115(b) of the Commission’s Rules⁸ establishes directional antenna standards designed to maximize the use of microwave spectrum, including the 11 GHz band, while avoiding interference between operators.⁹ Although the rule on its face does not mandate a specific size of antenna, it does specify certain technical parameters – maximum beamwidth, minimum antenna gain, and minimum radiation suppression – that, given the current state of technology, limit operators to a minimum antenna size of 1.22 meters. When the Commission adopted the instant antenna specifications, the parameters were based on the technical sophistication of the communications equipment and the needs of the various users of the band at the time.¹⁰ Indeed, the Commission adopted similar technical specifications that

⁶ See, e.g., Establishment of Policies and Service Rules for the Non-Geostationary Satellite Orbit, Fixed Satellite Service in the Ku-Band, IB Docket No. 01-96, *Notice of Proposed Rulemaking*, 16 FCC Rcd 9680, 9684 ¶ 10 (2001 *NGSO NPRM*).

⁷ See, e.g., *id.* at 9694 ¶ 45 (explaining that the Commission restricted NGSO FSS earth station usage in frequency spectrum bands shared with terrestrial operations “to avoid ubiquitous deployment of NGSO FSS earth stations in shared bands, thereby allowing the continued use and growth of terrestrial operations in those bands.”); Amendment of Parts 2 and 25 of the Commission’s Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the KU-Band Frequency Range, ET Docket No. 98-206, RM-9147, *First Report and Order and Further Notice of Proposed Rulemaking*, 16 FCC Rcd 10084 (2000) (noting that the Commission sought to ensure that NGSO FSS operations do not cause unacceptable interference to existing users and do not unduly constrain future growth of incumbent services); Inquiry Relative to Preparation for a General World Administrative Radio Conference of the International Telecommunications Union to Consider Revision of the International Radio Regulations, Docket No. 20271, *Report and Order*, 70 FCC 2d 1193, ¶¶ 189-191 (1978) (expressing concern that the 11 GHz band is shared quite extensively with terrestrial services in the United States, envisioning that the number of fixed-satellite earth stations would be limited to about half a dozen stations, located in places far from population centers, so as not to restrict unduly the further development of terrestrial services, and explicitly rejecting allowing the bi-directional use of the 11 GHz band by the FSS because it “would severely restrict the development of the terrestrial fixed service, especially the utilization of digital techniques.”); Amendment of Part 2 of the Commission’s Rules to Conform, to the Extent Practicable, with the Geneva Radio Regulations, as Revised by the Space Warc, Geneva, 1971, Docket No. 19547, *Report and Order*, 39 FCC 2d 959 (1973) (expressing intent to protect microwave use of the 11 GHz band).

⁸ 47 C.F.R. § 101.115(b).

⁹ 47 C.F.R. § 101.115(b). The Commission’s Rules set-forth certain requirements, specifications, and conditions pursuant to which FS stations may use antennas meeting either the more stringent performance standard in Category A (also known as Standard A) or the less stringent performance standard in Category B (also known as Standard B). See 47 C.F.R. § 101.115(b)-(d). In general, the Commission’s Rules require a Category B user to upgrade if the antenna causes interference problems that would be resolved by the use of a Category A antenna. See 47 C.F.R. § 101.115(c) (“The Commission shall require the replacement of any antenna . . . that does not meet performance Standard A . . . , at the expense of the licensee operating such antenna, upon a showing that said antenna causes or is likely to cause interference to (or receive interference from) any other authorized or applied for station whereas a higher performance antenna is not likely to involve such interference. . . .”).

¹⁰ The Commission adopted the technical standards in 47 C.F.R. § 101.115(b) that govern the use of FS antennas in the 11 GHz band in 1996 when consolidating the rules for the common carrier and private operational fixed (POFS) microwave services that were previously contained in Parts 21 and 94, respectively, of the Commission’s Rules to create a new Part 101. See Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, *Report and Order*, WT Docket No. 94-148, 11 FCC Rcd 13449 (1996) (*Part 101 R&O*). The Commission declined to consider significant changes to the proposed rule at that time because commenting parties did not sufficiently address the issue in the record. See *id.* at 13474-13475 ¶¶ 67-71; see also Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish a New Part

(continued....)

effectively limited the size of antennas used in other bands,¹¹ including those used by satellite.¹² However, the Commission has since reconsidered some of those antenna specifications in light of the technological evolution of communications equipment.¹³

4. Section 101.103 of the Commission's Rules¹⁴ establishes coordination procedures and interference standards applicable to the operation of FS antennas in the 11 GHz band. In establishing a new Part 101 of the Commission's Rules for the relocated common carrier and private operational fixed microwave users, the Commission adopted the Part 21 coordination procedures and the Part 94 interference standards.¹⁵ The coordination procedures and interference standards set-forth in Section 101.103 of the Commission's Rules are consistent with the industry standards developed by the TIA.

B. FiberTower Petition

5. On July 14, 2004, FiberTower filed a petition for rulemaking proposing amendments to the technical parameters in Section 101.115 of the Commission's Rules.¹⁶ Specifically, FiberTower proposes changes to those parameters that would permit the use of FS antennas with reduced mainbeam gain, increased beamwidth, and modified sidelobe suppression in the 11 GHz band.¹⁷ The proposed rules would effectively permit the use of 0.61 meter antennas as an optional alternative to the 1.22 meter antennas that meet the existing technical parameters for FS in the 11 GHz band.¹⁸ The FiberTower Petition also

(...continued from previous page)

101 Governing Terrestrial Microwave Fixed Radio Services, *Notice of Proposed Rule Making*, WT Docket No. 94-148, FCC 94-314, 10 FCC Rcd 2508, 2515 ¶ 19 (1994) (*Part 101 NPRM*).

¹¹ See, e.g., Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, *Memorandum Opinion and Order and Notice of Proposed Rulemaking*, WT Docket 94-148, 15 FCC Rcd 3129 (2000) (*Part 101 MO&O and NPRM*) (seeking comment on permitting smaller antennas in the 10 GHz band).

¹² See, e.g., Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the KU-Band Frequency Range, ET Docket No. 98-206, *Second Memorandum Opinion and Order*, 18 FCC Rcd 10084 (2003) (*2003 NGSO Second MO&O*).

¹³ See, e.g., Amendment of Part 101 of the Commission's Rules to Streamline Processing of Microwave Applications in the Wireless Telecommunications Services, WT Docket 00-19, *Report and Order*, 17 FCC Rcd 15040 (2002) (*2002 Part 101 R&O*) (adopting smaller antennas for 10 GHz band); Procedures to Govern the Use of Satellite Earth Stations on Board Vessels in the 5925-6425 MHz / 3700-4200 MHz Band and 14.0-14.5 GHz / 11.7-12.2 GHz Bands, IB Docket No. 02-10, *Report and Order*, 20 FCC Rcd 674 (2005).

¹⁴ 47 C.F.R. § 101.103.

¹⁵ See *Part 101 NPRM*, 10 FCC Rcd at 2514 ¶ 16 (citing Redevelopment of Spectrum to Encourage Innovation in the Use of New Technologies, ET Docket No. 92-9, *Second Report and Order*, 8 FCC Rcd 6495 (1993)).

¹⁶ 47 C.F.R. § 101.115. We note that on October 22, 2004, FiberTower requested a waiver of the same technical parameters in Sections 101.103 and 101.115 that it is seeking to change through the instant rulemaking. See Wireless Telecommunications Bureau Seeks Comment on FiberTower, Inc. Request for Waiver of Sections 101.103 and 101.115 of the Commission's Rules to Permit the Use of 0.61 Meter Antennas in the 10.7 – 11.7 GHz Band, *Public Notice*, DA 05-114, 20 FCC Rcd 1383 (WTB 2005) ("FiberTower Waiver Request PN"). On March 6, 2006, the Bureau granted FiberTower's waiver request, subject to certain conditions and the result of this proceeding. FiberTower, Inc., *Order*, 21 FCC Rcd 6386 (WTB 2006) ("*FiberTower Waiver Order*").

¹⁷ See FiberTower Petition, Appendix, Table 1.

¹⁸ See 47 C.F.R. § 101.115(b). The Commission's Rules, on their face, do not mandate a specific antenna size. Rather, they establish technical parameters that, given the state of technology, translate to a certain size antenna.

proposes amendments to Section 101.103 of the Commission's Rules¹⁹ to protect other users in the 11 GHz band from experiencing any greater interference from a FS licensee's use of a 0.61 meter antenna than would be experienced if the FS licensee were using a 1.22 meter antenna.²⁰ We discuss FiberTower's proposed amendments below.

1. Antenna Standards

6. The FiberTower Petition proposes that the Commission amend the antenna requirements set forth in Section 101.115 of the Commission's Rules²¹ by (1) changing the minimum antenna gain from 38 dBi to 33.5 dBi; (2) changing the maximum 3 dB beamwidth from 2.2 to 3.5 degrees; and (3) changing the sidelobe suppression requirements.²² Specifically, the antenna standards proposed by FiberTower differ from the current standards as follows:

| | Category | Maximum beam-width to 3 dB pts | Minimum antenna Gain (dBi) | Front/back ratio (dB) | Minimum radiation suppression to angle in degrees from centerline of main beam in decibels | | | | | | |
|-------------------------------|----------|--------------------------------|----------------------------|-----------------------|--|------------|------------|------------|-------------|--------------|--------------|
| | | | | | 5° to 10° | 10° to 15° | 15° to 20° | 20° to 30° | 30° to 100° | 100° to 140° | 140° to 180° |
| Current Standard | A | 2.2 | 38 | 55 | 25 | 29 | 33 | 36 | 42 | 55 | 55 |
| | B | 2.2 | 38 | 36 | 20 | 24 | 28 | 32 | 35 | 36 | 36 |
| Proposed Alternative Standard | A | 3.5 | 33.5 | 55 | 18 | 24 | 28 | 32 | 35 | 55 | 55 |
| | B | 3.5 | 33.5 | 45 | 17 | 24 | 28 | 32 | 35 | 40 | 45 |

7. FiberTower believes that its proposal to amend the Commission's Rules to permit the use of 0.61 meter antennas in the 11 GHz band will yield three significant benefits "arising from their lower cost, smaller size, and capability for making better use of spectrum."²³ First, FiberTower argues that small antennas cost less to manufacture, distribute, install, and maintain.²⁴ The lower-cost allegedly will prompt new competition over a broad range of services, including wireless local loop and T-1 transport and broadband Internet access.²⁵ Second, FiberTower explains that the modest size and weight of the 0.61 meter antenna allow more practical installation at sites that are otherwise incapable of supporting large antennas.²⁶ According to FiberTower, this flexibility allows for the inexpensive last-mile delivery of

¹⁹ 47 C.F.R. § 101.103.

²⁰ See FiberTower Reply Comments at 4-5.

²¹ 47 C.F.R. § 101.115(c).

²² See FiberTower Petition, Appendix.

²³ FiberTower Petition at 4.

²⁴ FiberTower Petition at 4. FiberTower cites the current list price of a small antenna as being one-third the cost of an otherwise comparable 1.22 meter antenna. FiberTower Petition at 4.

²⁵ FiberTower Petition at 4.

²⁶ FiberTower Petition at 4-5. According to FiberTower, a 0.61 meter antenna is only one-fourth the size of a 1.22 meter antenna. FiberTower Petition at 4. FiberTower also notes that 0.61 meter antennas generally weigh about thirty-five pounds, whereas the 1.22 meter antennas weigh approximately 125 pounds. FiberTower Petition at 5.

wireless broadband service to locations that are otherwise prohibitively expensive or impossible to reach with 1.22 meter antennas.²⁷ Third, FiberTower argues that the optional use of small, 0.61 meter antennas in the 11 GHz band will promote the efficient use of the spectrum.²⁸ FiberTower contends that FS licensees have a special need for flexibility in the use of their spectrum because the Commission has reallocated FS spectrum to other services in recent years and because the new spectrum available to FS is suitable only for short-range applications.²⁹

8. FiberTower cites the Commission's adoption of the same standard in the 10.55-10.68 GHz (10 GHz band) as support for the use and benefits of smaller antennas.³⁰ Specifically, FiberTower notes that the Commission therein permitted the use of smaller antennas to promote the increased usage of the 10 GHz band, emphasizing the "undeniable" benefits of aesthetics and structure loading.³¹ However, according to FiberTower, the action taken by the Commission in the 10 GHz band only delivers some of the needed benefits because the band is only 130 megahertz wide (as opposed to 1,000 megahertz in the 11 GHz band) and the "maximum authorized channel width is only 5 MHz, which severely limits data rates."³² FiberTower therefore contends that licensees in the 10 GHz band that require increased capacity must go elsewhere and notes that a transition to nearby spectrum in the 11 GHz band will often be "relatively easy, inexpensive, and fast."³³

2. Interference Protection and Frequency Coordination

9. Although FiberTower states that small antennas tend to cause and are more susceptible to interference over a smaller range because they project energy over a shorter distance, FiberTower recognizes that certain interference issues may arise because a smaller antenna has a less tightly focused beam in comparison with a larger antenna.³⁴ In explaining the comparative characteristics of the two antennas, FiberTower notes that a "smaller antenna generally has a wider main lobe and bigger sidelobes relative to the main lobe."³⁵ FiberTower further indicates that "[t]his can affect coexistence with other

²⁷ FiberTower Petition at 5. In addition, FiberTower observes that smaller antennas are less esthetically objectionable, thereby facilitating compliance with restrictions imposed by local zoning laws and homeowner association codes. *See* FiberTower Petition at 5.

²⁸ FiberTower Petition at 5-6.

²⁹ FiberTower Petition at 5-6. Specifically, FiberTower argues that the need to reallocate the FS licensees from spectrum assigned to other services has placed great pressure on the remaining FS bands capable of handling reasonably long links (*i.e.*, the 4, 6, 11, 18, and 23 GHz bands). FiberTower Petition at 5-6. FiberTower notes that the Commission routinely coordinates licensees in the 4 GHz and 6 GHz bands for the entire band and satellite arc regardless of actual need, and thus blocks many FS coordination efforts, especially in populated areas. FiberTower Petition at 6. With respect to the 18 GHz and 23 GHz bands, FiberTower contends that scant spectrum remains available in the former after the Commission's recent reallocation, and Federal government installations in the latter limit private use. FiberTower Petition at 6.

³⁰ *See* FiberTower Petition at 3-4 (*citing* Amendment of Part 101 of the Commission's Rules to Streamline Processing of Microwave Applications in the Wireless Telecommunications Services, *Report and Order*, 17 FCC Rcd 15040 (2002) (*2002 Part 101 Streamlining Order*)).

³¹ FiberTower Petition at 3-4 (*citing* *2002 Part 101 Streamlining Order*, 17 FCC Rcd at 15075 ¶ 77).

³² FiberTower Petition at 4.

³³ FiberTower Petition at 4.

³⁴ FiberTower Petition at 2.

³⁵ FiberTower Petition at 2.

users of the band, both Fixed Service licensees and satellite earth stations.”³⁶ Specifically, FiberTower explains that a small antenna may, depending on the geometry, be more likely to cause interference to an 11 GHz FS receiver or satellite earth station located off the antenna axis.³⁷

10. The FiberTower Petition therefore proposes that the Commission amend Section 101.103 of the Commission’s Rules³⁸ to establish specific frequency coordination requirements to address the use of 0.61 meter antennas for FS in the 11 GHz band.³⁹ Specifically, FiberTower proposes that the Commission amend Section 101.103 of the Commission’s Rules to add the following paragraph (j):

(j) *Coordination of small antennas in the 10.7-11.7 GHz band.* (1) A licensee or prior applicant using an antenna smaller than 1.22 meters (4 feet) in diameter may object to a prior coordination notice (i) only if it has actual grounds to object because of predicted interference, and (ii) only to the extent it would have grounds to object if it were using a 1.22 meter antenna at the same site, polarization, frequency, bandwidth, and orientation.

(2) A Fixed Service applicant attempting to frequency coordinate an antenna of 1.22 meters in diameter or larger, or an applicant for a Fixed Satellite Service earth station, that predicts received interference from a licensee or prior applicant using an antenna smaller than 1.22 meters in diameter, can require the licensee or prior applicant to reduce the predicted interference to levels no higher than would be predicted from antenna of 1.22 meters in diameter.⁴⁰

According to FiberTower, the proposed amendment to Section 101.103 of the Commission’s Rules⁴¹ ensures that smaller antennas do not disadvantage either satellite earth stations or FS stations using larger antennas. FiberTower emphasizes that the proposed amendment clearly places any burden arising from the use of a small antenna on the party opting to deploy such an antenna in the 11 GHz band.⁴² FiberTower believes that, with such changes to the Commission’s Rules, “the deployment of small antennas will be transparent to others sharing the spectrum.”⁴³

³⁶ FiberTower Petition at 2.

³⁷ FiberTower Petition at 3. FiberTower also notes that a small antenna may be more susceptible to received interference originating from a source removed from the antenna axis. *Id.*

³⁸ 47 C.F.R. § 101.103.

³⁹ FiberTower Petition at 6-8.

⁴⁰ FiberTower Reply Comments at 5-6. FiberTower revised the proposed rule in its reply comments in response to the Satellite Industry Association’s (SIA’s) contention that the rules, as originally proposed, failed to adequately protect earth station applicants. *See* FiberTower Reply Comments at 3-5. SIA is a U.S.-based trade association representing the leading U.S. and international satellite manufacturers, service providers, and launch service companies.

⁴¹ 47 C.F.R. § 101.103.

⁴² FiberTower Petition at 3.

⁴³ FiberTower Petition at 3.

C. Public Notice and Comments

11. The FiberTower Petition was placed on public notice for comment on July 23, 2004.⁴⁴ The Commission received five comments, two reply comments, and a number of *ex parte* filings in response to the *Public Notice*.⁴⁵ The comments and *ex parte* filings submitted in response to the *Public Notice* represent the views of equipment manufacturers,⁴⁶ associations representing the fixed microwave community⁴⁷ or the satellite industry,⁴⁸ and a frequency coordinator that specializes in spectrum management of terrestrial microwave, satellite, and mobile telecommunications systems.⁴⁹ SIA was the only commenting party opposing the FiberTower Petition.⁵⁰

12. Alcatel, FWCC, NextWeb, Harris, and DragonWave filed comments or *ex parte* letters supporting FiberTower's proposal to amend the Commission's Rules to permit the use of 0.61 meter FS antennas in the 11 GHz band.⁵¹ These parties agree that 0.61 meter antennas cost less to manufacture, distribute, install, and maintain.⁵² They also agree with FiberTower that the smaller size and more modest

⁴⁴ Consumer & Governmental Affairs Bureau Reference Information Center Petition for Rulemaking Filed, *Public Notice*, Report No. 2666 (July 23, 2004) (*Public Notice*).

⁴⁵ See Alcatel, Comments (filed Aug. 23, 2004); Comsearch, Comments (filed Aug. 23, 2004); Fixed Wireless Communications Coalition, Comments (filed Aug. 23, 2004); NextWeb, Inc., Comments (filed Aug. 12, 2004); Satellite Industry Association, Opposition (filed Aug. 23, 2004) (SIA Comments); Alcatel, Reply Comments (filed Sept. 7, 2004); FiberTower, Inc., Reply Comments (filed Sept. 7, 2004); Harris Corporation, *Ex Parte* Comments (filed July 25, 2005); Dragonwave, Inc. *Ex Parte* Comments (filed Nov. 14, 2005); Letter from Michael E. McCormick, Program Manager, Cingular Wireless, to Magalie Salas, Secretary, FCC (filed Jan. 12, 2005; dated Dec. 15, 2004) ("Cingular Letter"). FiberTower disclosed additional *ex parte* contacts with Commission staff in the instant docket, including responses to staff requests for additional information to evaluate FiberTower's request for waiver of the same rules that are the subject of the instant rulemaking. See Letter from Mitchell Lazarus, Esq., Fletcher, Heald, and Hildreth, P.L.C., to Marlene H. Dortch, Secretary, FCC (filed Dec. 1, 2004) (First *Ex Parte* Letter); Letter from Mitchell Lazarus, Esq., Fletcher, Heald, and Hildreth, P.L.C., to Joel Taubenblatt, Chief, Broadband Division, Wireless Telecommunications Bureau, FCC (filed Dec. 22 2004) (Second *Ex Parte* Letter); Letter from Mitchell Lazarus, Esq., Fletcher, Heald, and Hildreth, P.L.C., to Marlene H. Dortch, Secretary, FCC (filed Oct. 17, 2005) (Third *Ex Parte* Letter); Letter from Mitchell Lazarus, Esq., Fletcher, Heald, and Hildreth, P.L.C., to Marlene H. Dortch, Secretary, FCC (filed Oct. 24, 2005) (Fourth *Ex Parte* Letter). Unless otherwise noted, the comments and *ex parte* presentations referenced herein are filed in the appropriate docket, RM-11043, for the instant proceeding. Comments and other filings that were submitted exclusively in the context of the Commission's consideration of FiberTower's waiver request do not appear in the instant docket and may be viewed by interested parties by following the instructions explained in detail in the public notice that sought comment on the request. See FiberTower Waiver Request PN.

⁴⁶ See Alcatel Comments; Alcatel Reply Comments; FiberTower Reply Comments; Harris *Ex Parte* Comments; DragonWave *Ex Parte* Comments; see also SIA Comments; FWCC Comments.

⁴⁷ See FWCC Comments. The Fixed Wireless Communications Coalition (FWCC) is a coalition of companies, associations, and individuals interested in terrestrial fixed microwave communications, including manufacturers, licensees, and communications service providers.

⁴⁸ See SIA Comments.

⁴⁹ See Comsearch Comments.

⁵⁰ See SIA Comments.

⁵¹ See generally Alcatel Comments; Alcatel Reply Comments; FWCC Comments; NextWeb Comments; Harris Comments; DragonWave Comments; see also Comsearch Comments at 2.

⁵² See Alcatel Comments at 1-2; FWCC Comments at 2; Harris Comments at 1-2; DragonWave Comments at 1-2. For example, Alcatel notes that smaller antennas will reduce the costs for users and that easier installation will expedite the deployment of new wireless links and associated services. Alcatel Comments at 1-2.

weight of 0.61 meter antennas will invite the installation of FS antennas at sites incapable of supporting 1.22 meter antennas.⁵³ In addition, Harris, Alcatel, FWCC, NextWeb, and DragonWave contend that the optional use of small, 0.61 meter antennas in the 11 GHz band will promote the efficient use of the spectrum.⁵⁴ To this end, a number of commenting parties specifically emphasize the need for the Commission to provide FS licensees with additional flexibility in the use of their spectrum because the Commission has reallocated FS spectrum to other services in recent years or because the new spectrum available to FS is congested or suitable only for short-range applications.⁵⁵

13. To support its comments and the FiberTower Petition, Alcatel prepared and submitted a “White Paper Report on Proposed Changes to Small Antenna Standards in the 11 GHz Band” with “some simplified interference path calculations” to show the minimal impact of deploying 0.61 meter antennas in the 11 GHz band.⁵⁶ Specifically, according to Alcatel, the path calculations “show that the optional alternative Category A antenna (“New A”) is comparable to production models of four-foot antennas having a gain of 40.4 dBi and meeting current Category A specifications for off-axis radiation suppression.”⁵⁷ Alcatel therefore concludes that “deployment of the New A antenna is expected to have minimal impact on other users of the 11 GHz band because the off-axis gain performance of the New A antenna is comparable to current Category A antennas.”⁵⁸

14. Comsearch believes that the antenna pattern requirements and coordination rules proposed by FiberTower must be carefully reviewed.⁵⁹ Comsearch is optimistic that rules permitting the use of smaller antennas could be created to minimize the interference impact and avoid placing any users of the band at a

⁵³ See FWCC Comments at 1-2; Harris Comments at 2; Alcatel Comments at 1-2; DragonWave Comments at 1-2. Alcatel suggests that smaller antennas will increase utilization of the 11 GHz band by allowing links to be constructed on “space- and weight-limited facilities.” Alcatel Comments at 1.

⁵⁴ Harris Comments at 1-2; Alcatel Comments at 1-2; FWCC Comments at 1-2; NextWeb Comments at 2; DragonWave Comments at 1-2.

⁵⁵ See FWCC Comments at 2; NextWeb Comments at 2; Alcatel Comments at 2. FWCC agrees with FiberTower that lower costs and easier installation at 11 GHz will make it easier to accommodate FS licensees displaced by reallocations of FS spectrum to other uses. See FWCC Comments at 2. NextWeb notes the difficulty it has occasionally experienced in locating licensed spectrum for its high-capacity backhaul links in the other Part 101 bands. NextWeb Comments at 2. Specifically, NextWeb explains that “6 GHz band has long been hoarded by private users and carriers and is rarely available due to the challenge of coordinating with satellite users; the 10.5 GHz band does not provide sufficient payload; and the 18 GHz and 23 GHz bands are both highly used and suffer greater amounts of rain-fading.” NextWeb Comments at 2 n. 2; see also Alcatel Comments at 2 (noting that, because of lower rainfall attenuation, the 11 GHz band is well suited as an alternative to the 18 GHz band). In contrast, NextWeb notes that it has identified certain 11 GHz paths that would be sufficiently reliable for the level of service needed by its customers. Nextweb Comments at 2; see also Alcatel Comments at 2 (explaining that, even with smaller antennas, the useful transmission range at 11 GHz will exceed that of the typical 18 GHz link and therefore offer a solution for rain-limited applications in the 18 GHz band).

⁵⁶ See Alcatel Comments, Exhibit A. Alcatel submitted a revised *White Paper* with its reply comments. See Alcatel Reply Comments, Exhibit A (*White Paper*). We herein refer to the revised study as the *White Paper*.

⁵⁷ Alcatel Comments at 2.

⁵⁸ Alcatel Comments at 2.

⁵⁹ Comsearch Comments at 2.

disadvantage.⁶⁰ Moreover, Comsearch suggests that additional mitigation options such as a power or EIRP tradeoff could also be considered in a rulemaking proceeding.⁶¹

15. SIA opposes the rule changes proposed by FiberTower because it believes the proposed rules will have a significant adverse effect on earth station spectrum access, thereby further impairing FSS operators' ability to operate in the band should future FSS operation in the band be permitted.⁶² SIA notes that FiberTower references the action taken by the Commission in 2002 in modifying the antenna standards for FS operations in the 10.55-10.68 GHz (10 GHz) band to support its request that the Commission permit the introduction of smaller antennas in the 11 GHz band.⁶³ However, SIA emphasizes that, unlike the 10 GHz band, the 11 GHz band is shared with FSS systems. SIA argues that obtaining effective access to the 11 GHz band is critical for FSS operations.⁶⁴ Specifically, SIA notes that the 11 GHz band is used for geostationary satellite (GSO) operations, and a portion of the spectrum is designated as a planned band under Appendix 30B of the ITU rules.⁶⁵ SIA further notes that the Commission has authorized non-geostationary satellite (NGSO) systems to use the band for feeder link operations.⁶⁶ Although SIA concedes that FSS use of 11 GHz band, to date, has been limited,⁶⁷ it contends that the band is vital for expansion purposes.⁶⁸ SIA therefore pleads that the Commission not consider any changes to the 11 GHz rules that would adversely affect existing FSS operations or create new obstacles to future FSS deployment.⁶⁹

16. In addition, SIA raises a number of specific interference concerns. SIA contends that an earth station operator could face a situation in which it experiences harmful interference as a result of the aggregate effect of several nearby FS antennas, even if each antenna standing alone would not create a problem.⁷⁰ SIA also argues that the size of the equipment and the technical characteristics of the 0.61 meter antenna make it more difficult to point accurately, thereby possibly subjecting other users in the band to higher levels of interference than otherwise predicted at the coordination stage.⁷¹ Finally, according to SIA, the language of the proposed rule is vague with respect to how a user experiencing

⁶⁰ Comsearch Comments at 2.

⁶¹ Comsearch Comments at 2.

⁶² SIA Comments at 8.

⁶³ See SIA Comments at 2; FiberTower Petition at 1 n.1 (*citing* Amendment of Part 101 of the Commission's Rules to Streamline Processing of Microwave Applications in the Wireless Telecommunications Services, *Report and Order*, 17 FCC Rcd 15040 (2002) (*2002 Part 101 Streamlining Order*)).

⁶⁴ SIA Comments at 3.

⁶⁵ SIA Comments at 3.

⁶⁶ SIA Comments at 3.

⁶⁷ SIA cites, as the primary reason for the limited use of band, the Commission's strict interpretation of 47 C.F.R. § 2.106, note NG 104 (specifying that satellite use of the 10.7-11.7 GHz band is limited to international systems).

⁶⁸ SIA Comments at 3.

⁶⁹ SIA Comments at 5. SIA states that the 11 GHz band "is used for downlink transmissions originating 22,300 miles from the earth's surface that can only be received using sensitive FSS earth stations. Because of that sensitivity, . . . FSS Earth stations are extremely vulnerable to the increased interference that could be caused by deployment of smaller FS antennas." SIA Comments at 5.

⁷⁰ SIA Comments at 7.

⁷¹ SIA Comments at 7.

interference from the operation of a 0.61 meter FS antenna would exercise the rights accorded under FiberTower's proposed rule, 101.103(j).⁷²

III. DISCUSSION

A. Need for Rule Changes

17. We conclude that the public interest would be served by initiating a proceeding to consider the possibility of modifying the Commission's Rules to permit the installation of 0.61 meter antennas in the 11 GHz band. We seek comment on the proposal set-forth in FiberTower's petition for rulemaking to amend Sections 101.103 and 101.115 of the Commission's Rules⁷³ to permit the use of 0.61 meter antennas by FS operators in the 11 GHz band.⁷⁴ In particular, we seek comment on whether the proposed amendments would facilitate the efficient use of the 11 GHz band by affording FS licensees the flexibility to install 0.61 meter antennas in the 11 GHz band while appropriately protecting other users in the band from interference. We also seek comment on whether these changes will facilitate a range of fixed microwave applications – including those that support third generation mobile services – that are not currently being accommodated in the 11 GHz band under the existing rules governing use of the band. In that regard, we note that four entities other than FiberTower have filed waiver requests seeking permission to use 0.61 meter antennas in the 11 GHz band.⁷⁵ Like FiberTower, these petitioners argue that more intensive use of the 11 GHz band would increase efficiency⁷⁶ and allow the band to be used to provide various types of wireless broadband services.⁷⁷ We believe these waiver requests demonstrate a strong interest in using 0.61 meter antennas in the 11 GHz band. Accordingly, we seek comment on the issues set-forth below.

B. Shared Nature of the 11 GHz Band

18. We recognize that the 11 GHz band is shared on a co-primary basis with the FSS. SIA contends that the 11 GHz band is vital for the future deployment of FSS and that the Commission should therefore not take any action that would impede FSS expansion.⁷⁸ However, the domestic use of the 11 GHz band by the FSS has been limited, to date, because the Commission has sought to protect the use and expansion of terrestrial microwave services within the band.⁷⁹ Indeed, the Commission's Rules explicitly

⁷² SIA Comments at 6. For example, SIA states that, while FiberTower's proposed rules indicate that an applicant can require the small antenna operator to reduce its interference, it gives no guidance as to the procedures. SIA Comments at 6.

⁷³ 47 C.F.R. §§ 101.103, 101.115.

⁷⁴ See Section II.B *supra*.

⁷⁵ See Petition for Waiver of Nextlink Wireless, Inc. (filed Aug. 4, 2006) (Nextlink Waiver Request), Petition for Waiver filed by First Avenue Networks, Inc. (filed Aug. 10, 2006) (FAN Waiver Request), Petition for Waiver and Expedited Action filed by Telecom Transport Management, Inc. (filed Sep. 8, 2006) (TTM Waiver Request), Petition for Expedited Waiver Pending Rulemaking, Conterra Ultra Broadband, LLC (filed Jan. 22, 2007) (Conterra Waiver Request).

⁷⁶ Nextlink Waiver Request at 8, FAN Waiver Request at 3, TTM Waiver Request at 7-8, Conterra Waiver Request at 7-8.

⁷⁷ Nextlink Waiver Request at 1-3, FAN Waiver Request at 1-2, TTM Waiver Request at 4-5, 7-8, Conterra Waiver Request at 6.

⁷⁸ SIA Comments at 3.

⁷⁹ See *supra*, note 7.

limit satellite use of the 11 GHz band to international systems.⁸⁰ The Commission's intent and effect in adopting footnote NG104 was to limit the expansion of FSS in the 11 GHz band and protect the future use of the band for FS.⁸¹ We therefore tentatively conclude that the shared nature of the 11 GHz band does not preclude the Commission from facilitating the efficient use of the 11 GHz band by permitting FS users to erect 0.61 meter antennas while appropriately protecting other users in the band from harmful interference associated with the use of smaller antennas. We seek comment on our tentative conclusion.

19. We also note that the technical specifications that limit the size of FS antennas in the 11 GHz band reflect the technical sophistication of the communications equipment and the needs of the various users of the band at the time that the rules were adopted.⁸² The Commission adopted similar technical specifications that effectively limited the size of antennas used in other bands,⁸³ including those used by satellite.⁸⁴ However, the Commission has since reconsidered many of those antenna specifications in light of the technological evolution of communications equipment.⁸⁵ Accordingly, we believe it may be appropriate to review the technical specifications for the 11 GHz band.

C. Technical Parameters in Section 101.115

1. Generally

20. We recognize that the proposed use of smaller, lower-gain antennas will result in more radiofrequency energy being transmitted in directions away from the actual point-to-point link.⁸⁶ We

⁸⁰ See 47 C.F.R. § 2.106, NG104.

⁸¹ See 47 C.F.R. § 2.106 NG104 (stating that “[t]he use of the bands 10.7-11.7 GHz (space to Earth)...by the fixed satellite service in the geostationary-satellite orbit shall be limited to international systems, *i.e.*, other than domestic systems”). The Commission has found that the original intent of this footnote was to protect future FS growth by limiting the wide proliferation of FSS earth stations. See, e.g., Procedures to Govern the Use of Satellite Earth Stations on Board Vessels in the 5925-6425 MHz/3700-4200 MHz Band and 14.0-14.5 GHz/11.7-12.2 GHz Bands, IB Docket No. 02-10, *Report and Order*, 20 FCC Rcd 674, 710-11 ¶ 86 (2005); see also Service Rules and Procedures to Govern the Use of Aeronautical Mobile Satellite Service Earth Stations in Frequency Bands Allocated to the Fixed Satellite Service, IB Docket No. 05-20, *Notice of Proposed Rulemaking*, 20 FCC Rcd 2906, 2916-17 ¶ 18 (2005) (same).

⁸² Indeed, antenna standards exist for the purpose of promoting the use of the most discriminating equipment to facilitate the introduction of new transmission paths.

⁸³ See, e.g., Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, *Memorandum Opinion and Order and Notice of Proposed Rulemaking*, WT Docket 94-148, 15 FCC Rcd 3129 (2000) (*Part 101 MO&O and NPRM*) (seeking comment on permitting smaller antennas in the 10 GHz band).

⁸⁴ See, e.g., Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the KU-Band Frequency Range, ET Docket No. 98-206, *Second Memorandum Opinion and Order*, 18 FCC Rcd 10,084 (2003) (*2003 NGSO Second MO&O*).

⁸⁵ See, e.g., Amendment of Part 101 of the Commission's Rules to Streamline Processing of Microwave Applications in the Wireless Telecommunications Services, WT Docket 00-19, *Report and Order*, 17 FCC Rcd 15,040 (2002) (*2002 Part 101 R&O*) (adopting smaller antennas for the 10 GHz band); Procedures to Govern the Use of Satellite Earth Stations on Board Vessels in the 5925-6425 MHz / 3700-4200 MHz Band and 14.0-14.5 GHz / 11.7-12.2 GHz Bands, IB Docket No. 02-10, *Report and Order*, 20 FCC Rcd 674 (2005).

⁸⁶ This is due not only to the relaxed radiation suppression on angles away from the centerline of the main beam, but also because users of 0.61 meter antennas will have to transmit with approximately 4.5 dB more power in order to overcome the reduced main beam gain.

therefore wish to ensure that any proposed changes to the Commission's Rules appropriately protect other users in the band from interference due to the operation of 0.61 meter antennas.

21. Although we seek specific comments on particular interference concerns in the next two subsections, here we ask parties to comment on the more general issue of whether the use of 0.61 meter antennas by FS licensees in the 11 GHz band will adversely affect other users in the band by increasing the risk of interference. We invite parties to comment on the *White Paper* submitted by Alcatel which suggests that the impact of deploying 0.61 meter antennas in the 11 GHz band will be minimal. Parties should also comment on the extent to which the rules proposed by FiberTower mitigate or obviate interference concerns, or propose additional options to mitigate interference. For example, Comsearch suggested that the Commission could consider a power or EIRP tradeoff.⁸⁷

2. Aggregate Interference

22. According to SIA, an earth station operator could face a situation in which it experiences harmful interference as a result of the aggregate effect of several nearby FS antennas, even if each antenna standing alone would not create a problem.⁸⁸ FiberTower replies that SIA offers no support for its suggestion that multiple FS links in an area may create aggregate interference.⁸⁹ FiberTower also notes that the larger sidelobes of a 0.61 meter antenna may assist in limiting nearby frequency re-use, thereby minimizing aggregate interference.⁹⁰

23. We ask parties to comment on whether the use of 0.61 meter antennas by FS licensees in the 11 GHz band will adversely affect other users in the band by increasing the risk of aggregate interference. In particular, we seek comment on the risk that aggregate interference poses to earth stations. Commenting parties may suggest ways to avoid or mitigate instances of aggregate interference. Parties should also discuss the sufficiency of existing industry practices, coordination requirements, and interference criteria to address instances of aggregate interference.

3. Pointing Error

24. SIA contends that the size of the equipment and the technical characteristics of the antenna patterns make the 0.61 meter antenna more difficult to point accurately, thereby possibly subjecting other users in the band to higher levels of interference than otherwise predicted at the coordination stage.⁹¹ However, FiberTower replies that there is no evidence that smaller antennas are more difficult to point accurately; that the antennas are always professionally installed; and that licensees electing to install 0.61 meter antennas have every incentive to do so correctly because improper pointing will impair antenna performance.⁹²

⁸⁷ Comsearch Comments at 2. We invite Comsearch or other parties to expand on this suggestion.

⁸⁸ SIA Comments at 7.

⁸⁹ FiberTower Reply Comments at 5.

⁹⁰ FiberTower Reply Comments at 5. In the *FiberTower Waiver Order*, the Bureau noted that FiberTower had committed itself to limiting the number of antennas erected pursuant to the instant waiver to no more than 500 per year. *FiberTower Waiver Order*, 21 FCC Rcd at 6396 n.75. The Bureau correctly noted that "while we do not believe that this limitation is necessary to protect other licensees operating in the band, this commitment will make it easier for FiberTower to comply with any possible outcome in the related rulemaking." *Id.*

⁹¹ SIA Comments at 7.

⁹² FiberTower Reply Comments at 5.

25. We seek comment on whether the use of smaller antennas in the 11 GHz band significantly increases the risk of interference to other users in the band due to accuracy errors in pointing the 0.61 meter antennas. We invite parties to discuss the likelihood, effect, and addressability of pointing errors. For example, parties may comment on how the Commission has approached similar issues concerning interference due to pointing errors in the past.

D. Coordination Requirements in Section 101.103

1. FiberTower Proposal

26. The FiberTower Petition proposes amendments to the coordination requirements in Section 101.103 of the Commission's Rules⁹³ to protect other users in the 11 GHz band from experiencing any greater interference from the use of a 0.61 meter antenna than would be experienced by the use of a 1.22 meter antenna.⁹⁴ Specifically, pursuant to the proposed amendments, if either an FS applicant that is attempting to frequency coordinate a 1.22 meter (or larger) antenna for use in the 11 GHz band or an FSS applicant for an earth station in the 11 GHz band predicts received interference from an FS licensee or prior applicant using a 0.61 meter antenna in the 11 GHz band, it may require the FS licensee or prior applicant using the 0.61 meter antenna to reduce predicted interference to levels no higher than would be predicted from the use of a 1.22 meter antenna.⁹⁵ We seek comment on whether these amendments strike the appropriate balance between efficient spectrum use and interference protection in the 11 GHz band. We also seek comment on whether such amendments are sufficient to address potential interference concerns, or are unnecessary limitations on flexibility. We ask that parties address precedent where the Commission has amended technical rules to permit the use of smaller antennas.⁹⁶

2. Exercising Rights under the Proposal

27. SIA contends that the language of FiberTower's proposed rule 101.103(j) is vague with respect to how a user experiencing interference from the operation of a 0.61 meter FS antenna would exercise its rights.⁹⁷ However, FiberTower notes in response that additional detail is not included in a similar Commission requirement that a Category B antenna user upgrade to Category A in the event that interference caused by the licensee's use of a Category B antenna would be resolved by the use of a Category A antenna.⁹⁸ We invite parties to comment on whether the Commission's rules⁹⁹ and industry practices are sufficient to allow parties to resolve instances where 0.61 meter antennas cause more interference than otherwise would be caused by 1.22 meter antennas.

⁹³ 47 C.F.R. § 101.103.

⁹⁴ See FiberTower Reply Comments at 4-5.

⁹⁵ *Id.* In addition, the proposed amendments only permit the FS licensee or prior applicant using a 0.61 meter antenna in the 11 GHz band to object to a prior coordination notice if it would have actual grounds to object to predicted interference if it were using a 1.22 meter antenna at the same site, polarization, frequency, bandwidth, and orientation. *Id.*

⁹⁶ See, e.g., Amendment of Part 101 of the Commission's Rules to Streamline Processing of Microwave Applications in the Wireless Telecommunications Services, *Report and Order*, 17 FCC Rcd 15040 (2002).

⁹⁷ SIA Comments at 6. For example, SIA states that, while FiberTower's proposed rule indicates that an applicant can require the small antenna operator to reduce its interference, it gives no guidance as to the procedures. SIA Comments at 6.

⁹⁸ FiberTower Reply Comments at 5.

⁹⁹ 47 C.F.R. § 101.103.

IV. PROCEDURAL MATTERS

A. *Ex Parte* Rules – Permit-But-Disclose

28. This is a permit-but-disclose notice and comment rulemaking proceeding. *Ex parte* presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed pursuant to the Commission's rules.¹⁰⁰

B. Comment Period and Procedures

29. Pursuant to applicable procedures set-forth in sections 1.415 and 1.419 of the Commission's rules, 47 C.F.R. §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using: (1) the Commission's Electronic Comment Filing System (ECFS), (2) the Federal Government's eRulemaking Portal, or (3) by filing paper copies. See *Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: <http://www.fcc.gov/cgb/ecfs/> or the Federal eRulemaking Portal: <http://www.regulations.gov>. Filers should follow the instructions provided on the website for submitting comments.
 - For ECFS filers, if multiple docket or rulemaking numbers appear in the caption of this proceeding, filers must transmit one electronic copy of the comments for each docket or rulemaking number referenced in the caption. In completing the transmittal screen, filers should include their full name, U.S. Postal Service mailing address, and the applicable docket or rulemaking number. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions, filers should send an e-mail to ecfs@fcc.gov, and include the following words in the body of the message, "get form." A sample form and directions will be sent in response.
- Paper Filers: Parties who choose to file by paper must file an original and four copies of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (although we continue to experience delays in receiving U.S. Postal Service mail). All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- The Commission's contractor will receive hand-delivered or messenger-delivered paper filings for the Commission's Secretary at 236 Massachusetts Avenue, NE, Suite 110, Washington, DC 20002. The filing hours at this location are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building.
- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.

¹⁰⁰ See generally 47 C.F.R. §§ 1.1202, 1.1203, 1.1206.

- U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street, SW, Washington DC 20554.

People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (tty).

C. Initial Regulatory Flexibility Analysis

30. As required by the Regulatory Flexibility Act of 1980 (RFA),¹⁰¹ the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities of the policies and rules proposed in the *NPRM*. The analysis is found in Appendix B. We request written public comment on the analysis. Comments must be filed by the same dates as listed in paragraph 29, and must have a separate and distinct heading designating them as responses to the IRFA. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of this *NPRM*, including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration.

D. Initial Paperwork Reduction Analysis

31. This document does not contain proposed information collection(s) subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new or modified "information collection burden for small business concerns with fewer than 25 employees," pursuant to the Small Business Paperwork Relief Act of 2002.¹⁰²

E. Further Information

32. For further information concerning this rulemaking proceeding, contact Brian Wondrack, Wireless Telecommunications Bureau, at (202) 418-0653, Federal Communications Commission, 445 12th Street, S.W., Washington, D.C. 20554; or via the Internet to Brian.Wondrack@fcc.gov.

V. ORDERING CLAUSES

33. Accordingly, IT IS ORDERED, pursuant to sections 1, 2, 4(i), 7, 10, 201, 214, 301, 302, 303, 307, 308, 309, 310, 319, 324, 332 and 333 of the Communications Act of 1934, 47 U.S.C. §§ 151, 152, 154(i), 157, 160, 201, 214, 301, 302, 303, 307, 308, 309, 310, 319, 324, 332, 333, that this Notice of Proposed Rulemaking is hereby ADOPTED.

34. IT IS FURTHER ORDERED that NOTICE IS HEREBY GIVEN of the proposed regulatory changes described in this Notice, and that comment is sought on these proposals.

¹⁰¹ 5 U.S.C. § 603.

¹⁰² Public Law 107- 198, *see* 44 U.S.C. 3506(c)(4).

35. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Notice, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Proposed Rules

Part 101 of Title 47 of the Code of Federal Regulations is proposed to be amended as follows:

I. PART 101 – FIXED MICROWAVE SERVICES

1. The authority citation for Part 101 continues to read as follows: AUTHORITY: 47 U.S.C. 154, 303.

2. Amend Section 101.103 by adding a new paragraph (j) to read as follows:

(j) *Coordination of small antennas in the 10.7-11.7 GHz band.*

(1) A licensee or prior applicant using an antenna smaller than 1.22 meters (4 feet) in diameter may object to a prior coordination notice only (i) if it has actual grounds to object because of predicted interference, and (ii) to the extent it would have grounds to object if it were using a 1.22 meter antenna at the same site, polarization, frequency, bandwidth, and orientation.

(2) A Fixed Service applicant attempting to frequency coordinate an antenna of 1.22 meters in diameter or larger, or an applicant for a Fixed Satellite Service earth station, that predicts received interference from a licensee or prior applicant using an antenna smaller than 1.22 meters in diameter, can require the licensee or prior applicant to reduce the predicted interference to levels no higher than would be predicted from antenna of 1.22 meters in diameter.

3. Revising the table in Section 101.115(b)(2) of the Commission's Rules to read as follows:

(b) ***

(2) ***

| Frequency (MHz) | Category | Maximum beam-width to 3 dB pts | Minimum antenna Gain (dBi) | Minimum radiation suppression to angle in degrees from centerline of main beam in decibels | | | | | | |
|--------------------|----------|--------------------------------------|----------------------------------|---|------------|------------|------------|----------------|-----------------|-----------------|
| | | | | 5° to 10° | 10° to 15° | 15° to 20° | 20° to 30° | 30° to 100° | 100° to 140° | 140° to 180° |
| ***** | | | | | | | | | | |
| 10,700- 11,700* | A | 3.5 | 33.5 | 18 | 24 | 28 | 32 | 35 | 55 | 55 |
| | B | 3.5 | 33.5 | 17 | 24 | 28 | 32 | 35 | 40 | 45 |
| ***** | | | | | | | | | | |

APPENDIX B

Initial Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act of 1980, as amended (RFA),¹ the Commission has prepared this present Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in this Notice of Proposed Rulemaking (*NPRM*).² Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the *NPRM* provided in paragraph 29 of the *NPRM*. The Commission will send a copy of the *NPRM*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).³ In addition, the *NPRM* and IRFA (or summaries thereof) will be published in the *Federal Register*.⁴

A. Need for, and Objectives of, the Proposed Rules

In this *NPRM*, we seek comment on a petition for rulemaking filed by FiberTower, Inc. (FiberTower) on July 14, 2004.⁵ The FiberTower Petition requests that the Commission initiate a rulemaking to amend the technical parameters in Sections 101.103 and 101.115 of the Commission's Rules⁶ that establish interference protection for operators in the 10.7 – 11.7 GHz (11 GHz) band in order to permit the use of 0.61 meter ("two-foot") antennas as an optional alternative to the 1.22 meter ("four-foot") antennas that meet the existing technical parameters for Fixed Microwave Service in the 11 GHz band.⁷ Specifically, the FiberTower Petition proposes changes to the technical parameters in Section 101.115 of the Commission's Rules to permit the use of Fixed Service (FS) antennas with reduced mainbeam gain, increased beamwidth, and modified sidelobe suppression in the 11 GHz band.⁸ The FiberTower Petition also proposes amendments to Section 101.103 of the Commission's Rules⁹ to protect other users in the 11 GHz band from experiencing any greater interference from the use of a 0.61 meter antenna than would be experienced by the use of a 1.22 meter antenna.¹⁰

We seek comment in this *NPRM* on modifying the Commission's Rules to permit the installation of 0.61 meter antennas in the 11 GHz band, while appropriately protecting other users in the band. Such action could serve the public interest by facilitating the efficient use of the 11 GHz band. We tentatively

¹ See 5 U.S.C. § 603. The RFA, see 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. 104-121, Title II, 110 Stat. 857 (1996).

² Although we are conducting an IRFA at this stage in the process, it is foreseeable that ultimately we will certify this action pursuant to the RFA, 5 U.S.C. § 605(b), because we anticipate at this time that any rules adopted pursuant to this *Notice* will have no significant economic impact on a substantial number of small entities.

³ See 105 § 603(a).

⁴ See 105 § 603(a).

⁵ FiberTower, Inc., Petition for Rulemaking (filed July 14, 2004) (FiberTower Petition or Petition for Rulemaking).

⁶ 47 C.F.R. §§ 101.103, 101.115.

⁷ See 47 C.F.R. § 101.115(b). The Commission's Rules, on their face, do not mandate a specific antenna size. Rather, they establish technical parameters that, given the current state of technology, translate to a certain size antenna.

⁸ See FiberTower Petition, Appendix, Table 1.

⁹ 47 C.F.R. § 101.103.

¹⁰ See FiberTower Reply Comments at 4-5.

conclude that the shared nature of the 11 GHz band¹¹ does not preclude the Commission from facilitating the efficient use of the 11 GHz band by permitting FS users to erect 0.61 meter antennas. However, we also wish to ensure that any proposed changes to the Commission's Rules appropriately protect other users in the band from increased interference due to the use of 0.61 meter antennas. To this end, we seek comments on particular interference concerns as well as on the more general issue of whether the use of 0.61 meter antennas by FS licensees in the 11 GHz band will adversely affect other users in the band by increasing the likelihood of interference.

B. Legal Basis

The proposed action is authorized pursuant to sections 1, 2, 4(i), 7, 10, 201, 214, 301, 302, 303, 307, 308, 309, 310, 319, 324, 332 and 333 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 157, 160, 201, 214, 301, 302, 303, 307, 308, 309, 310, 319, 324, 332, and 333.

C. Description and Estimate of the Number of Small Entities To Which the Proposed Rules Will Apply

The RFA directs agencies to provide a description of, and where feasible, an estimate of the number of small entities that may be affected by the proposed rules and policies, if adopted.¹² The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."¹³ In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.¹⁴ A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.¹⁵

Nationwide, there are a total of approximately 22.4 million small businesses, according to SBA data.¹⁶ A "small organization" is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."¹⁷ Nationwide, as of 2002, there were approximately 1.6 million small organizations.¹⁸ The term "small governmental jurisdiction" is defined generally as "governments of cities, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."¹⁹ Census Bureau data for 2002 indicate that there were 87,525 local

¹¹ The 11 GHz band is allocated within the United States on a co-primary basis to the Fixed Services (FS), licensed under 47 C.F.R. Part 101, and to the Fixed Satellite Service (FSS), licensed under 47 C.F.R. Part 25.

¹² 5 U.S.C. § 603(b)(3).

¹³ 5 U.S.C. § 601(6).

¹⁴ 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

¹⁵ 15 U.S.C. § 632.

¹⁶ See SBA, Programs and Services, SBA Pamphlet No. CO-0028, at page 40 (July 2002).

¹⁷ 5 U.S.C. § 601(4).

¹⁸ Independent Sector, The New Nonprofit Almanac & Desk Reference (2002).

¹⁹ 5 U.S.C. § 601(5).

governmental jurisdictions in the United States.²⁰ We estimate that, of this total, 84,377 entities were “small governmental jurisdictions.”²¹ Thus, we estimate that most governmental jurisdictions are small.

Fixed Microwave Services. Microwave services include common carrier,²² private-operational fixed,²³ and broadcast auxiliary radio services.²⁴ At present, there are approximately 36,708 common carrier fixed licensees and 59,291 private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services. The Commission has not yet defined a small business with respect to microwave services. For purposes of the FRFA, we will use the SBA’s definition applicable to Cellular and other Wireless Telecommunications companies – *i.e.*, an entity with no more than 1,500 persons.²⁵ Census Bureau data for 2002 show that there were 1,397 firms in this category that operated for the entire year.²⁶ Of this total, 1,378 firms had employment of 999 or fewer employees, and 19 firms had employment of 1,000 employees or more.²⁷ Thus, under this size standard, the majority of firms can be considered small. We note that the number of firms does not necessarily track the number of licensees. We estimate that all of the Fixed Microwave licensees (excluding broadcast auxiliary licensees) would qualify as small entities under the SBA definition.

Satellite Telecommunications and Other Telecommunications. There is no small business size standard developed specifically for providers of international service. The appropriate size standards under SBA rules are for the two broad census categories of “Satellite Telecommunications” and “Other Telecommunications.” Under both categories, such a business is small if it has \$13.5 million or less in average annual receipts.²⁸

The first category of Satellite Telecommunications “comprises establishments primarily engaged in providing point-to-point telecommunications services to other establishments in the

²⁰ U.S. Census Bureau, Statistical Abstract of the United States: 2006, Section 8, page 272, Table 415.

²¹ We assume that the villages, school districts, and special districts are small, and total 48,558. See U.S. Census Bureau, Statistical Abstract of the United States: 2006, section 8, page 273, Table 417. For 2002, Census Bureau data indicate that the total number of county, municipal, and township governments nationwide was 38,967, of which 35,819 were small. *Id.*

²² 47 C.F.R. Part 101 *et seq.* (formerly, part 21 of the Commission’s Rules) for common carrier fixed microwave services (except MDS).

²³ Persons eligible under Parts 80 and 90 of the Commission’s rules can use Private-Operational Fixed Microwave services. See 47 C.F.R. Parts 80 and 90. Stations in this service are called operational-fixed to distinguish them from common carrier and public fixed stations. Only the licensee may use the operational-fixed station, and only for communications related to the licensee’s commercial, industrial, or safety operations.

²⁴ Auxiliary Microwave Service is governed by Part 74 of Title 47 of the Commission’s Rules. See 47 C.F.R. Part 74 *et seq.* Available to licensees of broadcast stations and to broadcast and cable network entities, broadcast auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter, or between two points such as a main studio and an auxiliary studio. The service also includes mobile TV pickups, which relay signals from a remote location back to the studio.

²⁵ 13 C.F.R. § 121.201, NAICS code 517212.

²⁶ U.S. Census Bureau, 2002 Economic Census, Subject Series: Information, “Establishment and Firm Size (Including Legal Form of Organization,” Table 5, NAICS code 517212 (issued Nov. 2005).

²⁷ *Id.* The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with “1000 employees or more.”

²⁸ 13 C.F.R. § 121.201, NAICS codes 517410 and 517910.

telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications.”²⁹ For this category, Census Bureau data for 2002 show that there were a total of 371 firms that operated for the entire year.³⁰ Of this total, 307 firms had annual receipts of under \$10 million, and 26 firms had receipts of \$10 million to \$24,999,999.³¹ Consequently, we estimate that the majority of Satellite Telecommunications firms are small entities that might be affected by our action.

The second category of Other Telecommunications “comprises establishments primarily engaged in (1) providing specialized telecommunications applications, such as satellite tracking, communications telemetry, and radar station operations; or (2) providing satellite terminal stations and associated facilities operationally connected with one or more terrestrial communications systems and capable of transmitting telecommunications to or receiving telecommunications from satellite systems.”³² For this category, Census Bureau data for 2002 show that there were a total of 332 firms that operated for the entire year.³³ Of this total, 259 firms had annual receipts of under \$10 million and 15 firms had annual receipts of \$10 million to \$24,999,999.³⁴ Consequently, we estimate that the majority of Other Telecommunications firms are small entities that might be affected by our action.

Space Stations (Geostationary). Commission records reveal that there are 15 space station licensees. We do not request nor collect annual revenue information, and thus are unable to estimate of the number of geostationary space stations that would constitute a small business under the SBA definition cited above, or apply any rules providing special consideration for Space Station (Geostationary) licensees that are small businesses.

Fixed Satellite Transmit/Receive Earth Stations. Currently there are approximately 3,390 operational fixed-satellite transmit/receive earth stations authorized for use in the C- and Ku-bands. The Commission does not request or collect annual revenue information, and thus is unable to estimate the number of earth stations that would constitute a small business under the SBA definition.

D. Description of Projected Reporting, Recordkeeping, and other Compliance Requirements

This *NPRM* proposes no new reporting or recordkeeping requirements. This *NPRM* proposes amendments to the Commission’s Rules to afford licensees in the Fixed Microwave Services (FS) with the flexibility to use a 0.61 meter antenna in the 11 GHz band as an optional alternative to the 1.22 meter antenna that meets the existing technical parameters for FS in the 11 GHz band. The proposed amendments would apply equally to large and small entities and benefit all FS licensees by reducing the

²⁹ U.S. Census Bureau, 2002 NAICS Definitions, “517410 Satellite Telecommunications”; <http://www.census.gov/epcd/naics02/def/NDEF517.HTM>.

³⁰ U.S. Census Bureau, 2002 Economic Census, Subject Series: Information, “Establishment and Firm Size (Including Legal Form of Organization),” Table 4, NAICS code 517410 (issued Nov. 2005).

³¹ *Id.* An additional 38 firms had annual receipts of \$25 million or more.

³² U.S. Census Bureau, 2002 NAICS Definitions, “517910 Other Telecommunications”; <http://www.census.gov/epcd/naics02/def/NDEF517.HTM>.

³³ U.S. Census Bureau, 2002 Economic Census, Subject Series: Information, “Establishment and Firm Size (Including Legal Form of Organization),” Table 4, NAICS code 517910 (issued Nov. 2005).

³⁴ *Id.* An additional 14 firms had annual receipts of \$25 million or more.

burden of seeking individual waivers to permit the use of 0.61 meter antennas in the 11 GHz band. The Commission requests comment on how these proposed rules may be modified to reduce the burden on small entities and still meet the objectives of the proceeding.

E. Steps taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof for small entities.³⁵

As noted above, this *NPRM* proposes rules to permit the use of 0.61 meter antennas as an optional alternative to the 1.22 meter antennas that meet the existing technical parameters for FS in the 11 GHz band. Because the proposed rules seek to provide FS licensees in the 11 GHz with additional flexibility, FS licensees retain the option of continuing to employ 1.22 meter antennas that meet the existing technical parameters for FS in the 11 GHz band. Thus, this proposed action would provide an additional option to all licensees, including small entity licensees. In this *NPRM*, we seek comment on this proposed action. Such action could serve the public interest by facilitating the efficient use of the 11 GHz band. The proposed rules could promote the efficient use of the spectrum and provide for a wide range of fixed microwave applications that are not currently being provided for in the 11 GHz band for financial, aesthetic, and regulatory reasons. The proposed rules could therefore open up economic opportunities to a variety of spectrum users, including small businesses. Indeed, a number of the commenting parties to support the proposed rules identify themselves as small businesses.

This *NPRM* seeks comments on particular interference concerns as well as on the more general issue of whether the use of 0.61 meter antennas by FS licensees in the 11 GHz band will adversely affect other users in the band by increasing the likelihood of interference. The Commission invites comment on any additional significant alternatives parties believe should be considered and on how the approach outlined in the *NPRM* will impact small entities. The Commission will continue to examine alternatives in the future with the objectives of eliminating unnecessary regulations and minimizing any significant economic impact on small entities.

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

None.

³⁵ 5 U.S.C. § 603(c).

**STATEMENT OF
COMMISSIONER JONATHAN S. ADELSTEIN**

Re: Amendment of Part 101 of the Commission's Rules to Modify Antenna Requirements for the 10.7-11.7 GHz Band; Notice of Proposed Rulemaking; WT Docket No. 07-51

While long overdue, I am pleased that we finally are adopting this Notice to consider the use of smaller antennas in the 11 GHz band. Smaller antennas are significantly easier to site on buildings and towers, and, provided that the potential for harmful interference can be appropriately managed, we should always try to encourage their use. This is particularly appropriate since these smaller antennas should make it easier for the last-mile delivery of wireless broadband services to buildings that may currently be difficult or expensive to reach with antennas currently allowed under our rules.

Given the potential benefits of this proceeding, it is unfortunate that it has taken over two and a half years for the Commission to act on the initiating FiberTower Petition for Rulemaking, which was filed on July 14, 2004. If we truly are going to be serious about promoting the deployment of spectrum-based services, and wireless broadband in particular, we must place a higher priority on moving these spectrum policy matters forward. For example, in a speech to the National Spectrum Managers Association in May 2006, I noted that the Commission was long overdue on ruling on a number of important spectrum matters including this very same proceeding:

But my concerns about our spectrum policy making and our wireless broadband efforts are not just limited to high profile proceedings. My staff and I regularly hear from parties who are developing new technologies or are involved in ongoing proceedings, but are unable to move forward due to a lack of guidance from the Commission. Unfortunately, the list is long and probably all too familiar to many in this room. Items like the pending petitions for reconsideration in the ESV proceeding; the FiberTower petition for rulemaking for two-foot antennas in the 11 GHz band; the long standing petition to rechannelize the 18 GHz band; and proposals to adopt a power spectral density-based emission limit, as an alternative to existing standards.¹

I do not necessarily know how these proceedings and waivers should be decided. But I do know that many of them touch on issues like wireless broadband and homeland security. That means they should be dealt with as quickly as possible. Technology in the wireless space moves too fast to be delayed by an unnecessarily long deliberation at the FCC.

¹ Remarks of Jonathan S. Adelstein, Commissioner, Federal Communications Commission, before the National Spectrum Managers Association, Spectrum Management 2006, Arlington, Virginia (May 16, 2006).

**STATEMENT OF
COMMISSIONER ROBERT M. McDOWELL**

Amendment of Part 101 of the Commission's Rules to Modify Antenna Requirements for the 10.7-11.7 GHz Band, *Notice of Proposed Rulemaking*, WT Docket No. 07-51

I am pleased that the Commission is moving forward to examine the possible use of two-foot antennas in the 11 GHz Band. And, I am hopeful that we will wrap up our work in this proceeding as soon as possible.

Prompt action by the Commission is essential so that the companies seeking relief, as well as others interested in entering the marketplace, can begin offering microwave backhaul service in the 11 GHz Band in areas where two-foot antennas are the most effective means of meeting customer needs. Furthermore, prompt action will allow these new entrants to compete with each other, as well as with landline backhaul providers, on an equal footing; thus increasing competition and lowering costs throughout the entire backhaul market. This is especially important as the consumer acceptance of 3G and 4G high speed data services – such as those envisioned for deployment in the soon-to-be-auctioned 700 MHz band – increases the need for backhaul.

For these reasons, I support this rulemaking and look forward to resolving the issues it raises quickly.